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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,316	06/30/2003	Adrian Boariu	NC17653 9015.051	4006

7590 06/09/2005

Docket Clerk  
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EXAMINER

GANTT, ALAN T

ART UNIT PAPER NUMBER

2684

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/611,316

Applicant(s)

BOARIU ET AL.

Examiner

Alan T. Gantt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 2-8 and 11-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12904.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al., in view of Dorne et al

Regarding claim 1, Walton discloses techniques to schedule terminals for data transmission on the downlink and/or uplink in a MIMO-OFDM system based on the spatial and/or frequency signatures of the terminals. A scheduler forms one or more sets of terminals for possible data transmission for each of a number of frequency bands. Thus, Walton includes a method for scheduling weighted transmissions from two or more transmit antennas of a base station to each of two or more mobile stations in a closed-loop transmit diversity system, the method comprising steps of:

determining the quantity of power available for data transmission from each transmit antenna; (paragraphs 0042,0059, 0168, 0174)

determining each combination of set of mobile stations that may be served simultaneously by a base station; (paragraphs 0056, 0063, 0070, 0085, 0154)

for each combination set, computing unused power  $\Delta$  with reference to the quantity of power available for data transmission from each

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transmit antenna, and the power required to transmit data from each transmit antenna to each respective mobile station in the said set; (paragraphs 0042,0059, 0168, 0174)

for each of said combination sets of mobile stations, including said unused power .DELTA.; (paragraphs 0056, 0063, 0070, 0085, 0154)

determining the combination set of mobile stations that has a substantially minimum global cost; (paragraphs 0056, 0063, 0070, 0085, 0154) and

scheduling the transmission of data from each transmit antenna to the mobile stations which constitute said combination set of mobile stations that has a substantially minimum global cost. (paragraphs 0056, 0063, 0070, 0085, 0154)

Walton does not actually compute a global cost utilizing a global cost function.

Dorne discloses a resource management method and apparatus used in planning of resource deployment. Dorne is utilized for his teaching related to the global cost function.

Dorne meets the limitation –

computing a global cost from a global cost function with reference to one or more variables (paragraphs 0126 and 0166)

Walton and Dorne are combinable because they share a common endeavor, namely, choosing a best combination. At the time of the applicant's invention it would have been

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obvious to modify Walton to utilize computation of a global cost from a global cost function with reference to one or more variables as done by Dorne to better quantify the choices of the best combination set of mobile terminals.

Regarding claim 9, Walton meets the limitation - The method of claim 1, wherein the power required by each mobile station is quantized. (paragraphs 0042 and 0059)

Regarding claim 10, Walton discloses techniques to schedule terminals for data transmission on the downlink and/or uplink in a MIMO-OFDM system based on the spatial and/or frequency signatures of the terminals. A scheduler forms one or more sets of terminals for possible data transmission for each of a number of frequency bands. Thus, Walton includes a base station comprising:

two or more transmit antennas, each of which comprises a quantity of power available for the transmission of data; (paragraphs 0042, 0059, 0168, 0174 –code is obviously required to carry out these functions)

an electronic data processor adapted for executing program code, said processor being connected to said two or more, transmit antennas and being configured for configuring data for transmission via said two or more transmit antennas; (paragraphs 245-265, 270-280, 312, and 313)

a memory connected to said processor, the memory comprising:

program code for determining each combination of set of mobile stations that may be served simultaneously by a base station; (paragraphs 0056, 0063, 0070, 0085, 0154)

program code for computing, for each combination of set of mobile stations, unused power  $\Delta$  with reference to the quantity of power, available for data transmission from each transmit antenna, and the power required to transmit data from each transmit antenna to each respective mobile station in the said set; (paragraphs 0042, 0059, 0168, 0174 –code is obviously required to carry out these functions)

program code for computing, for each of said combination sets of mobile stations, including said unused power  $\Delta$ ; (paragraphs 0056, 0063, 0070, 0085, 0154)

program code for determining the combination set of mobile stations that has a substantially minimum global cost; (paragraphs 0056, 0063, 0070, 0085, 0154) and

program code for scheduling the transmission of data from each transmit antenna to the mobile stations which constitute said combination set of mobile stations that has a substantially minimum global cost. (paragraphs 0056, 0063, 0070, 0085, 0154)

Walton does not actually compute a global cost utilizing a global cost function.

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Dorne discloses a resource management method and apparatus used in planning of resource deployment. Dorne is utilized for his teaching related to the global cost function.

Dorne meets the limitation –

computing a global cost from a global cost function with reference to one or more variables (paragraphs 0126 and 0166)

Walton and Dorne are combinable because they share a common endeavor, namely, choosing a best combination. At the time of the applicant's invention it would have been obvious to modify Walton to utilize computation of a global cost from a global cost function with reference to one or more variables as done by Dorne to better quantify the choices of the best combination set of mobile terminals.

***Allowable Subject Matter***

Claims 17-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 17, the level of details outlining the closed loop transmit diversity system distinguished applicant's system and was neither found, suggest, nor made evident by f the prior art.

Claims 2-8 and 11-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:

Regarding the claims, the details were neither found, suggested, nor made evident by the prior art.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hottinen discloses a data transfer method for a mobile communication system enabling the use of closed loop radio resource control schemes in radio systems with insufficient signaling resources.

Luschi et al. discloses a method of sending control information in a wireless telecommunication network

Hamalainen et al. discloses a method in a communication system that is adapted to provide communication channels for transmission of information to user equipment in time frames such that information to a plurality of user equipment can be multiplexed into a time frame.

Any inquiry concerning this communication from the examiner should be addressed to Alan Gantt at telephone number (571) 272-7878. The examiner can normally be reached between 9:30 AM and 6 PM within the Eastern Time Zone. The group FAX number is (703) 872-9306.



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Any inquiry of a general nature or relating to this application should be directed to  
Supervisory Patent Examiner Nay Maung at telephone number (571) 272-7882.

*Alan T. Gantt*  
Alan T. Gantt

May 14, 2005

*Nick Corsaro*

**NICK CORSARO  
PRIMARY EXAMINER**